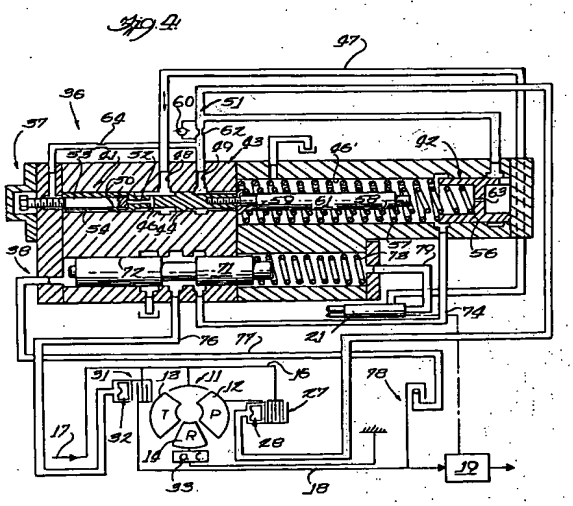
## REMARKS

Claims 9-24 are rejected, under 35 U.S.C. § 103(a), as being unpatentable over Allen et al. `417 in view of a new reference, Suzuki `638. The Applicant acknowledges and respectfully traverses the raised obviousness rejection in view of the above amendments, new claims and following remarks.

As the Examiner is aware, in order to properly support an obviousness-type rejection in view of a combination of references under 35 U.S.C. § 103, the references must provide some disclosure, teaching or suggestion which would lead one of ordinary skill in the art to combine them in the manner as suggested by the Examiner. The U.S. Patent Office Board of Appeals has consistently upheld this requirement, "We have studied the references and the manner in which the examiner proposes to combine their teachings but we are unable to find in these references any suggestion that they should or could be combined, absent appellant's disclosure in the present application." Ex Parte Lennox, 144 USPQ 224, 225 (U.S. Patent Office Board of Appeals 1964).

Allen et al. `417 discloses a control system for ensuring the appropriate sequential engagement, as well as the rate of engagement, of the transmission torque converter lock-up clutch and input clutch 27, as shown in Fig. 1 of Allen et al. `417. "In addition to regulating the engagement sequence for the various clutches as discussed above, it is also necessary to closely regulate the rate of engagement for the clutches. . .". Column 4, lines 17-20.



More specifically, Allen et al. `417, discloses a clutch control assembly 36 indicated generally at Fig. 4 as shown above, and described at least at column 4, paragraph 31 through column 5, line 42, which discusses the hydraulic actuation and control of the input clutch 27.

As noted by the Examiner, there is no disclosure, teaching or suggestion in the Allen et al. `417 reference relating to a pressure sensor, much less the specific placement or structural arrangement of such a sensor as in the presently claimed invention. Besides the fact that there is no disclosure of a pressure sensor obtaining and utilizing a pressure of the interior of the torque converter, the upper portion 37 of the clutch control assembly 36 which regulates the operation of the input clutch 27 in Allen et al. `417, is actuated according to a pressure in the lock- up clutch 31 as specifically discussed at column 6, lines 34-37: "The rate of pressurization or modulation for the input clutch 27 is regulated by the accumulator means 42 either alone or in combination with the restricted orifice 62." In other words, the modulation of the input clutch 27 in Allen et al. `417 is balanced, or controlled according to the lock-up clutch and the associated slide valves and accumulator in the clutch control assembly.

Allen et al. `417 is a completely different system for providing an appropriate actuation pressure to the input clutch which does not contemplate nor need the pressure sensors as disclosed either in JP `906, Suzuki `638 or in the present invention. Thus, beyond the fact there is no disclosure, teaching or suggestion of such sensors, their structure or relative function, it is the Applicant's position that this reference teaches away from the use of pressure sensors as in Suzuki `638 any of the previously cited references, and the present invention.

Entirely different from the hydraulic pressure balancing and the accumulator 42 between the lock-up clutch and input clutch of Allen et al. `417, Suzuki `638 discloses an apparatus for controlling the initiation of the lock-up clutch 13 operation based on throttle opening TVO and the vehicle speed VSP. Specifically, it is the control unit 3 as seen in see Fig. 1 of Suzuki `638 which controls the lock-up solenoid 24 so as to smoothly engage the lock-up clutch 13. In a second embodiment, described at column 9, lines 14-26, oil pressure sensors are provided in the first and second oil paths 15, 16 to fix the rate of increase of the duty ratio DH when the pressure PR of the release chamber coincides with the pressure PA of the apply chamber 18.

These sensors 15, 16 are beneficial to maintain the clutch 13 in a partially engaged state for only a predetermined period of time, and minimizes the wear caused on the clutch from a prolonged partially engaged state.

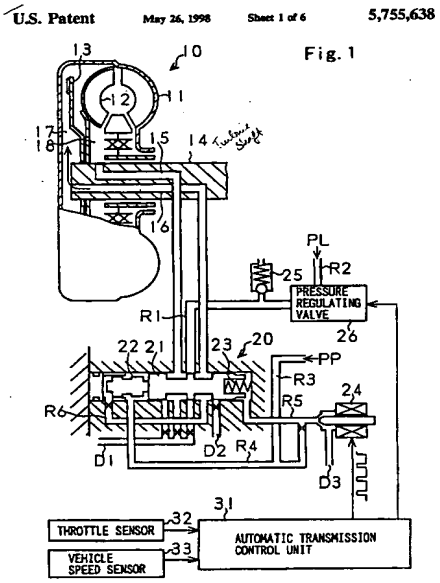
While it may be that pressure sensors are known in the art of transmission and hydrodynamic torque converter control, such a statement even if it is true, does not validate the combination of the specific design of the Suzuki `638 reference which merely discloses a pair of pressure sensors located in oil supply and withdrawal lines 15, 16 through the rotating turbine shaft (see column 5, lines 20-26), with the specific accumulator design of Allen et al `417. It is important to note that the first and second oil shafts 15, 16 in Suzuki `638 are ". . .disposed in parallel with each other *within the turbine shaft* 14 in Fig. 1." (emphasis added). Column 5, lines 20, 21.

Observing Fig. 1 of Allen et al. `417 it is readily apparent that no such similar structure exists. Although a central coolant or lubrication passageway (unnumbered) is provided in the output shaft 18 itself, this passage does not communicate with the converter 11. In Fig. 1 of Allen et al `417, the Examiner has noted a coolant feed line which feeds coolant into the input clutch, however this is not a pressure line through which pressure inside the converter can be measured, but a coolant feed line with relatively constant flow and pressure for supplying coolant to the input clutch, and in which it would not be appropriate or even possible to adequately measure a pressure within the converter housing.

Thus, even if it would be obvious to use sensors such as in Suzuki `638 in the Allen et al. reference, and the Applicant adamantly denies that it is, there is no pressure passage in Allen et al. `417 communicating with the interior of the converter to provide the appropriate placement for such a sensor and thus Allen et al `417 would have to be significantly structurally modified to accommodate such a sensor.

In any event, even if it were possible to combine the references as alleged by the Examiner, and again the Applicant adamantly disagrees with this assumption, such a combination would merely use the pressure passages extending through the turbine shaft 14 as disclosed in Suzuki `638 and shown in Fig. 1 of Suzuki reproduced for the Examiner's

convenience below. This combination, if even possible, would still fail to disclose, teach or suggest all the features of the presently claimed invention as now set forth in amended claim 9 which includes the subject matter of previous claim 11 including the feature, "wherein the converter housing (1) has a pressure line (16) through which the converter's internal pressure is transmitted via a rotary connection (15) to a positionally fixed component (13) in which the pressure sensor in arranged."




Contrary to the Applicant's claimed structure, any combination of the cited references would place Suzuki's sensors in the rotating turbine shaft, i.e., the output shaft, as expressly set forth in Suzuki `638 where the oil shafts 15, 16 and hence the sensors, are disposed in parallel with one another within the rotating turbine shaft 14. As noted in col. 5 lines, 20-22, "While the first and second oil paths 15, 16 are disposed in parallel with each other within the turbine shaft 14 in Fig. 1" and further that, "[i]n the second embodiment, therefore, oil pressure sensors are provided in the first and second oil paths 15, 16." Column 9, lines 19-21.

This is specifically different from the presently claimed invention where placing the sensors in a positionally fixed structural arrangement is an important aspect of the present invention. As noted in the Applicant's disclosure at paragraph 011,

> Preferably, the pressure is determined by a pressure sensor arranged in a component whose position is fixed. Preferably, this positionally fixed component is connected to the inside space of the converter by a rotary connection and a pressure line.

This is an important feature of the present invention as the positionally fixed component permits the sensor signal to be sent directly to the control unit via an electric circuit without interruption or interference from, for instance, the use of an electrical collector ring. Via the pressure line, the sensors detect exactly the actual pressure inside the torque converter near the piston, and

knowing the exact pressure, it is of course significantly easier to control and apply the appropriate slip condition of the clutch.

As noted above, independent claim 9 now includes the feature wherein the pressure line communicates the pressure to a sensor in a positionally fixed component of the converter which is completely different from the rotating turbine output shaft where the sensors are positioned in Suzuki `638. As such a specifically recited feature is not disclosed taught or suggested by any of the applied references, either alone or in combination, the Applicant respectfully requests withdrawal of the obviousness rejections.

Claim 16 has been amended to include the subject matter of previous claim17 so as to currently recite the features ". . .a pressure line (16) through which the converter's internal pressure is transmitted from the rotatable converter housing (1) via *a rotary connection (15)* to a relatively fixed component (13) in which the pressure sensor in arranged". The additional feature of the rotary pressure connection is not disclosed, taught or suggested in any manner by the cited references either alone or in combination. In fact, because the sensors 15, 16 in Suzuki `638 are located within the rotating turbine shaft 14 rotating together with the turbine of the converter there is a direct pressure connection between the inside of the converter housing and the sensors 15, 16, thus no such rotary pressure connection is conceivable.

Claim 18 is similarly amended to include the subject matter of claim 22 and the feature "wherein the pressure sensor (12) is arranged in a positionally fixed component radially aligned between a turbine shaft and the converter housing." This new feature includes the further structure not disclosed, taught or suggested by Suzuki where the positionally fixed component is arranged between the turbine shaft and the converter housing.

With regards to new claims 25-30, it is important to note that the Applicant's unique structure for accurately determining the internal pressure of the converter includes several features and elements not disclosed, taught or suggested in any manner by the references, either alone, or in combination. With regards to claim 25, nowhere in the Suzuki `638 reference nor the Allen et al reference is there described or taught any sort of passage or aperture through the clutch piston connecting the converter housing to the pump impeller. This feature

of the Applicant's invention is recited in claim 25, specifically, "wherein the rotary pressure sensing line communicates with the inner space of the converter housing on a first side of the piston and *an aperture is provided in the piston of the clutch* to provide communication of the rotary pressure sensing line with a fluid pressure on an opposing second side of the piston. ". The Examiner has noted an aperture in the Fig. 1 of Allen in the official action on page 3. As best the Applicant understands the noted structure there is an "aperture" allowing communication of fluid within the converter housing. However, completely different from the recitation of new claim 25, this aperture is not provided in the clutch piston.

Turning to new claim 29 it is another feature of the present invention that the rotary pressure sensing line 16 is formed only through the converter housing 1, and not through the turbine output shaft of the converter as in Suzuki ``638. A previously pointed out with respect to this reference, Suzuki `638 expressly discloses at least the passages 15, 16, if not any pressure sensors as well, located ". . .within the turbine shaft 14. . ." at column 5, line21. As can be observed in the Applicant's Figs. 1 and 2, the rotary pressure sensing line 16 extends only through the converter housing 1, and not through the rotating turbine shaft 14 as explicitly stated and shown in Suzuki. In this regard, claim 29 recites the features "wherein the rotary pressure sensing line *extends through the converter housing* and communicates with the inner space of the converter housing on one side of the piston and a stationary pressure sensing line formed in the positionally fixed component (12) connects to the rotary pressure sensing line formed in the converter housing via a rotary connection." As at least these features of the presently claimed invention are neither disclosed, taught or suggested in any manner by the cited references, either alone or in combination, the Applicant believes these new claims to be allowable as well. If any further amendment to this application is believed necessary to advance prosecution and place this case in allowable form, the Examiner is courteously solicited to contact the undersigned representative of the Applicant to discuss the same.

In view of the above amendments and remarks, it is respectfully submitted that all of the raised obviousness rejection should be withdrawn at this time. If the Examiner disagrees with the Applicant's view concerning the withdrawal of the outstanding rejection(s) or applicability

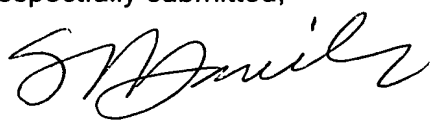
of the Allen et al. `417 and Suzuki `638 references, the Applicant respectfully requests the Examiner to indicate the specific passage or passages, or the drawing or drawings, which contain the necessary teaching, suggestion and/or disclosure required by case law. As such teaching, suggestion and/or disclosure is not present in the applied references, the raised rejection should be withdrawn at this time. Alternatively, if the Examiner is relying on his/her expertise in this field, the Applicant respectfully requests the Examiner to enter an affidavit substantiating the Examiner's position so that suitable contradictory evidence can be entered in this case by the Applicant.

In view of the foregoing, it is respectfully submitted that the raised obviousness rejections should be withdrawn and this application is now placed in a condition for allowance. Action to that end, in the form of an early Notice of Allowance, is courteously solicited by the Applicant at this time.

The Applicant respectfully requests that any outstanding objection(s) or requirement(s), as to the form of this application, be held in abeyance until allowable subject matter is indicated for this case.

In the event that there are any fee deficiencies or additional fees are payable, please charge the same or credit any overpayment to our Deposit Account (Account No. 04-0213).

Respectfully submitted,



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